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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,697	09/29/2003	Jean-Yves Bonnefoy	1430-287	7814

23117 7590 12/20/2006
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
BASI, NIRMAL SINGH	
ART UNIT	PAPER NUMBER
1646	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/671,697	BONNEFOY ET AL.	
	Examiner	Art Unit	
	Nirmal S. Basi	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *1-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *2/29/03* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/29/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Amendment filed 8/14/06 has been entered. Preliminary Amendment filed 9/29/03 has been entered.

Election/Restrictions

2. Applicant's election with traverse of Group XVII (claims 21-22) in the reply filed on 8/14/06 is acknowledged. The traversal is on the ground(s) that it would not impose a serious burden to examine closely related inventions of Groups V to VIII and XVII. This is not found persuasive because the methods of Groups V to VIII and XVII are distinct for reasons given in the previous Office action. Therefore, there exists a serious search burden to examine the extra groups, V to VIII and XVII, as one invention. Accordingly, claims 1-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP 821.03.

The requirement is still deemed proper and is therefore made FINAL.

3. IDS filed 9/2/906 has been considered.

4. The drawings filed 9/2/903 have been approved by the examiner.

5. The Declaration/oath is objected to because it does not claim priority to U.S. Application number 08/969,125, 09/545,002 or foreign priority based on United Kingdom application 9625899.1 filed 12/13/06. The wording of an oath or declaration cannot be amended. If the wording is not correct or if all of the required affirmations have not been made or if it has not been properly subscribed to, a new oath or declaration is required. The new oath or declaration must properly identify the application of which it is to form a part, preferably by

application number and filing date in the body of the oath or declaration. See MPEP 602.01 and 602.02. Appropriate correction is required.

6. The Brief Description of the Drawings is objected to because each Figure must described separately. Figure 1A and 1B, must be described separately in the Brief Description of the Drawings, or the equivalent, as required by 37 C.F.R. 1.84 (u)(1).

Appropriate correction is required.

Claim Rejection, 35 U.S.C. 101

7. Claims 22 is rejected under **35 U.S.C. 101**, because the claimed invention is directed to non-statutory subject matter. The claim is drawn to antibody. The claim fails to recite that the claimed antibody is isolated, purified, or otherwise show the hand of the inventor. Accordingly, the claim reads on naturally occurring antibody, as it occurs occur *in vivo*, which is non-statutory subject matter. Amending the claims to recite that the antibody is isolated and purified would obviate this rejection

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 21-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21 provides for the use of a polypeptide in raising or selecting antibodies, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 21 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim 22 is indefinite because it is not clear what is a "synthetic construct thereof" so as to allow the metes and bounds of the claims to be determined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an

application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claim 22 is rejected under 35 U.S.C. 102(e) as being anticipated by Wilson et al (US Patent 6,911,530, which is a divisional of 09/051,843 filed 10/23/96).

Wilson discloses a method and of making an antibody and an antibody that binds to NR4 polypeptide. The NR4 polypeptide, i.e. interleukin receptor alpha chain (SEQ ID NO:4 and 2) of Wilson have 98.9% and 72.9% query match respectively, with the polypeptide of SEQ ID NO:9 of instant application (IL-13 receptor).

Sequence comparison of SEQ ID NOs:4 and 2 (Wilson patent) with SEQ ID NO:9 (instant application) are shown below:

```
RESULT 4
US-09-688-286D-4
; Sequence 4, Application US/09688286D
; Patent No. 6911530
; GENERAL INFORMATION:
;  APPLICANT: Willson, Tracey
;  APPLICANT:  Nicola , Nicos
;  APPLICANT:  Hilton, Douglas
;  APPLICANT:  Metcalf, Donald
;  APPLICANT:  Zhang , Jian
;  TITLE OF INVENTION: A novel haemopoietin receptor and genetic sequences
encoding same
;  FILE REFERENCE: 23199-215
;  CURRENT APPLICATION NUMBER: US/09/688,286D
;  CURRENT FILING DATE:  2003-07-10
;  PRIOR APPLICATION NUMBER: AU PN6135
;  PRIOR FILING DATE: 1995-10-23
;  PRIOR APPLICATION NUMBER: AU PN7276
;  PRIOR FILING DATE: 1995-12-22
;  PRIOR APPLICATION NUMBER: AU PP2208
;  PRIOR FILING DATE: 1996-09-09
;  NUMBER OF SEQ ID NOS: 12
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 4
;   LENGTH: 426
;   TYPE: PRT
;   ORGANISM: human
US-09-688-286D-4

  Query Match             98.9%;  Score 2296.5;  DB 2;  Length 426;
  Best Local Similarity   99.3%;  Pred. No. 2.2e-217;
```

```
  Matches  424;  Conservative    0;  Mismatches    2;  Indels    1;  Gaps    1;

Qy          1 MEWPARLCGLWALLLCAGGGGGGGGAAPTETQPPVTNLSVSVENLCTVIWTWNPPEGASS 60
              |||||||||||||||||||||||| ||||||||||||||||||||||||||||||||||
Db          1 MEWPARLCGLWALLLCAGGGGGGGG-APTETQPPVTNLSVSVENLCTVIWTWNPPEGASS 59

Qy         61 NCSLWYFSHFGDKQDKKIAPETRRSIEVPLNERICLQVGSQCSTNESEKPSILVEKCISP 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         60 NCSLWYFSHFGDKQDKKIAPETRRSIEVPLNERICLQVGSQCSTNESEKPSILVEKCISP 119

Qy        121 PEGDPESAVIELQCIWHNLSYMKCSWLPGRNTSPDTNYTLYYWHRSLEKIHQCENIFREG 180
              |||||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||
Db        120 PEGDPESAVTELQCIWHNLSYMKCSWLPGRNTSPDTNYTLYYWHRSLEKIHQCENIFREG 179

Qy        181 QYFGCSFDLTKVKDSSFEQHSVQIMVKDNAGKIKPSFNIVPLTSRVKPDPPHIKNLSFHN 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        180 QYFGCSFDLTKVKDSSFEQHSVQIMVKDNAGKIKPSFNIVPLTSRVKPDPPHIKNLSFHN 239

Qy        241 DDLYVQWENPQNFISRCLFYEVEVNNSQTETHNVFYVQEAKCENPEFERNVENTSCFMVP 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        240 DDLYVQWENPQNFISRCLFYEVEVNNSQTETHNVFYVQEAKCENPEFERNVENTSCFMVP 299

Qy        301 GVLPDTLNTVRIRVKTNKLCYEDDKLWSNWSQEMSIGKKRNSTLYITMLLIVPVIVADAI 360
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||| ||
Db        300 GVLPDTLNTVRIRVKTNKLCYEDDKLWSNWSQEMSIGKKRNSTLYITMLLIVPVIVAGAI 359

Qy        361 IVLLLYLKRLKIIIFPPIPDPGKIFKEMFGDQNDDTLHWKKYDIYEKQTKEETDSVVLIE 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        360 IVLLLYLKRLKIIIFPPIPDPGKIFKEMFGDQNDDTLHWKKYDIYEKQTKEETDSVVLIE 419

Qy        421 NLKKASQ 427
              |||||||
Db        420 NLKKASQ 426
```

```
US-09-688-286D-2
; Sequence 2, Application US/09688286D
; Patent No. 6911530
; GENERAL INFORMATION:
;  APPLICANT: Willson, Tracey
;  APPLICANT:  Nicola , Nicos
;  APPLICANT:  Hilton, Douglas
;  APPLICANT:  Metcalf, Donald
;  APPLICANT:  Zhang , Jian
;  TITLE OF INVENTION: A novel haemopoietin receptor and genetic sequences
encoding same
;  FILE REFERENCE: 23199-215
;  CURRENT APPLICATION NUMBER: US/09/688,286D
;  CURRENT FILING DATE:  2003-07-10
;  PRIOR APPLICATION NUMBER: AU PN6135
;  PRIOR FILING DATE: 1995-10-23
;  PRIOR APPLICATION NUMBER: AU PN7276
;  PRIOR FILING DATE: 1995-12-22
;  PRIOR APPLICATION NUMBER: AU PP2208
;  PRIOR FILING DATE: 1996-09-09
;  NUMBER OF SEQ ID NOS: 12
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 2
;   LENGTH: 424
;   TYPE: PRT
```

```
;   ORGANISM: Mus musculus
US-09-688-286D-2

  Query Match            72.9%;  Score 1692.5;  DB 2;  Length 424;
  Best Local Similarity  74.6%;  Pred. No. 6.6e-158;
  Matches  318;  Conservative   40;  Mismatches   65;  Indels    3;  Gaps    2;

Qy          1 MEWPARLCGLWALLLCAGGGGGGGGAAPTETQPPVTNLSVSVENLCTVIWTWNPPEGASS 60
              |  ||  |  |  |||       |  || || |||||||||||||||:||||:||||||
Db          1 MARPALLGELLVLLLWT--ATVGQVAAATEVQPPVTNLSVSVENLCTIIWTWSPPEGASP 58

Qy         61 NCSLWYFSHFGDKQDKKIAPETRRSIEVPLNERICLQVGSQCSTNESEKPSILVEKCISP 120
              ||:| ||||| |:||||||||| |  |:||:|:|||||||||| ||||||| ||:|||||
Db         59 NCTLRYFSHFDDQQDKKIAPETHRKEELPLDEKICLQVGSQCSANESEKPSPLVKKCISP 118

Qy        121 PEGDPESAVIELQCIWHNLSYMKCSWLPGRNTSPDTNYTLYYWHRSLEKIHQCENIFREG 180
              ||||||||| ||:|||||||||||||||||||||:||||||: ||||  |||||:|||
Db        119 PEGDPESAVTELKCIWHNLSYMKCSWLPGRNTSPDTHYTLYYWYSSLEKSRQCENIYREG 178

Qy        181 QYFGCSFDLTKVKDSSFEQHSVQIMVKDNAGKIKPSFNIVPLTSRVKPDPPHIKNLSFHN 240
              |:  ||| |||| : |||  :||||||||||||:||  || ||| |||||||||:|   |
Db        179 QHIACSFKLTKV-EPSFEHQNVQIMVKDNAGKIRPSCKIVSLTSYVKPDPPHIKHLLLKN 237

Qy        241 DDLYVQWENPQNFISRCLFYEVEVNNSQTETHNVFYVQEAKCENPEFERNVENTSCFMVP 300
              | |||:||||| |||| ||||||:||: ||:  |:| ||:| | :||:| |||| :|
Db        238 GALLVQWKNPQNFRSRCLTYEVEVNNTQTDRHNILEVEEDKCQNSESDRNMEGTSCFQLP 297

Qy        301 GVLPDTLNTVRIRVKTNKLCYEDDKLWSNWSQEMSIGKKRNSTLYITMLLIVPVIVADAI 360
              ||| | : |||:||||||||::|:||||:||:  ||||::||| | |||| :|| || |:
Db        298 GVLADAVYTVRVRVKTNKLCFDDNKLWSDWSEAQSIGKEQNSTFYTTMLLTIPVFVAVAV 357

Qy        361 IVLLLYLKRLKIIIFPPIPDPGKIFKEMFGDQNDDTLHWKKYDIYEKQTKEETDSVVLIE 420
              |:|| ||||||||||||||||||||||||||||||||||||||||:||||||||||
Db        358 IILLFYLKRLKIIIFPPIPDPGKIFKEMFGDQNDDTLHWKKYDIYEKQSKEETDSVVLIE 417

Qy        421 NLKKAS 426
              |||||:
Db        418 NLKKAA 423
```

Wilson discloses:

His invention is directed to antibodies to NR4 (IL-13 receptor alpha) and its derivatives or its ligands (e.g. IL-13). Such antibodies may be monoclonal or polyclonal and may be selected from naturally occurring antibodies to NR4 or may be specifically raised to NR4 or derivatives thereof. In the case of the latter. NR4 or its derivatives may first need to be associated with a carrier molecule.

The antibodies and/or recombinant NR4 or its derivatives of the present invention are particularly useful as therapeutic or diagnostic agents.

Antibodies to NR4 may be monoclonal or polyclonal. Alternatively, fragments of antibodies may be used such as Fab fragments. Furthermore, the present invention extends to recombinant and synthetic antibodies and to antibody hybrids. A "synthetic antibody" is considered herein to include fragments and hybrids of antibodies. The antibodies of this aspect of the present invention are particularly useful for immunotherapy and may also be used as a diagnostic tool for assessing the receptor or receptor-ligand interaction or monitoring the program of a therapeutic regimen.

Further Wilson claims antibodies specifically:

CLAIMS:

1. An isolated antibody generated using an IL-13 receptor .alpha.-chain polypeptide comprising all or part of SEQ ID NO: 4, which antibody binds to an IL-13 receptor .alpha.-chain.

2. An isolated antibody which binds specifically to an IL-13 receptor .alpha.-chain consisting of the sequence of SEQ ID NO: 4.

Therefore, many of the antibodies disclosed by Wilson will inherently bind to the polypeptide of SEQ ID NO:9 of instant application. Wilson also teaches raising antibodies that bind to the polypeptide of SEQ ID NO:9. The disclosure of meets the limitation of claim 22, absent evidence to the contrary.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aman (see IDS, J. Biol. Chem., Vol. 271, No.46, November 15, pages 29265-29270, 1996) in view of Takatsu et al (US Patent 5,453,491).

Aman discloses a polypeptide (IL-13 receptor alpha chain) which has 99.5% query match with the polypeptide of SEQ ID NO:9.

Sequence comparison of the Aman polypeptide and SEQ ID NO:9 of instant application is disclosed below:

```
RESULT 1
I13R1_HUMAN
ID   I13R1_HUMAN    STANDARD;      PRT;   427 AA.
AC   P78552; O95646; Q99656;
DT   01-NOV-1997, integrated into UniProtKB/Swiss-Prot.
DT   01-MAY-1997, sequence version 1.
DT   07-MAR-2006, entry version 50.
DE   Interleukin-13 receptor alpha-1 chain precursor (IL-13R-alpha-1) (IL-
DE   13RA-1) (CD213a1 antigen).
GN   Name=IL13RA1; Synonyms=IL13R, IL13RA;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini; Hominidae;
OC   Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   NUCLEOTIDE SEQUENCE [MRNA].
RC   TISSUE=Carcinoma;
RX   MEDLINE=97165986; PubMed=9013879; DOI=10.1016/S0014-5793(96)01462-7;
RA   Miloux B., Laurent P., Bonnin O., Lupker J., Caput D., Vita N.,
RA   Ferrara P.;
RT   "Cloning of the human IL-13R alpha1 chain and reconstitution with the
RT   IL4R alpha of a functional IL-4/IL-13 receptor complex.";
RL   FEBS Lett. 401:163-166(1997).
RN   [2]
RP   NUCLEOTIDE SEQUENCE [MRNA].
RC   TISSUE=B-cell;
RA   Gauchat J.F.M., Schlagenhauf E., Feng N.P., Moser R., Yamage M.,
RA   Jeannin P., Alouani S., Elson G., Notarangelo L.D., Wells T.,
RA   Eugster H.P., Bonnefoy J.Y.;
RL   Submitted (JAN-1997) to the EMBL/GenBank/DDBJ databases.
RN   [3]
RP   NUCLEOTIDE SEQUENCE [MRNA].
RC   TISSUE=T-cell;
RX   MEDLINE=97067184; PubMed=8910586; DOI=10.1074/jbc.271.46.29265;
RA   Aman M.J., Tayebi N., Obiri N.I., Puri R.K., Modi W.S., Leonard W.J.;
RT   "cDNA cloning and characterization of the human interleukin 13
RT   receptor alpha chain.";
RL   J. Biol. Chem. 271:29265-29270(1996).
RN   [4]
RP   NUCLEOTIDE SEQUENCE [MRNA].
RA   Wada M., Hisano T., Kuwano M.;
RL   Submitted (SEP-1999) to the EMBL/GenBank/DDBJ databases.
RN   [5]
RP   NUCLEOTIDE SEQUENCE [LARGE SCALE MRNA].
RC   TISSUE=Pancreas;
RX   MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA   Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA   Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA   Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA   Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA   Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA   Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA   Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA   Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA   Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
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RA   Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA   Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA   Fahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA   Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA   Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA   Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA   Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA   Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT   "Generation and initial analysis of more than 15,000 full-length human
RT   and mouse cDNA sequences.";
RL   Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
CC   -!- FUNCTION: Binds IL13 with a low affinity. Together with IL4R-alpha
CC       can form a functional receptor for IL13. Also serves as an
CC       alternate accessory protein to the common cytokine receptor gamma
CC       chain for IL4 signaling, but cannot replace the function of gamma
CC       C in allowing enhanced IL2 binding activity.
CC   -!- SUBUNIT: Interleukin 13 receptor is a complex of IL4R, IL13RA1,
CC       and possibly other components.
CC   -!- SUBCELLULAR LOCATION: Membrane; single-pass type I membrane
CC       protein.
CC   -!- TISSUE SPECIFICITY: Ubiquitous. Highest levels in heart, liver,
CC       skeletal muscle and ovary; lowest levels in brain, lung and
CC       kidney. Also found in B-cells, T-cells and endothelial cells.
CC   -!- DOMAIN: The WSXWS motif appears to be necessary for proper protein
CC       folding and thereby efficient intracellular transport and cell-
CC       surface receptor binding.
CC   -!- DOMAIN: The box 1 motif is required for JAK interaction and/or
CC       activation.
CC   -!- SIMILARITY: Belongs to the type I cytokine receptor family. Type 5
CC       subfamily.
CC   ---------------------------------------------------------------------
CC   Copyrighted by the UniProt Consortium, see http://www.uniprot.org/terms
CC   Distributed under the Creative Commons Attribution-NoDerivs License
CC   ---------------------------------------------------------------------
DR   EMBL; Y10659; CAA71669.1; -; mRNA.
DR   EMBL; Y09328; CAA70508.1; -; mRNA.
DR   EMBL; U62858; AAB37127.1; -; mRNA.
DR   EMBL; U81379; AAD00510.3; -; mRNA.
DR   EMBL; BC009960; AAH09960.1; -; mRNA.
DR   Ensembl; ENSG00000131724; Homo sapiens.
DR   H-InvDB; HIX0017008; -.
DR   HGNC; HGNC:5974; IL13RA1.
DR   MIM; 300119; gene.
DR   GO; GO:0005898; C:interleukin-13 receptor complex; TAS.
DR   GO; GO:0005886; C:plasma membrane; TAS.
DR   GO; GO:0007166; P:cell surface receptor linked signal transdu. . .; TAS.
DR   InterPro; IPR002996; Cytkn_rcpt_B/G.
DR   InterPro; IPR003532; Hempt_rcpt_S_F2.
DR   PROSITE; PS01356; HEMATOPO_REC_S_F2; 1.
KW   Glycoprotein; Membrane; Receptor; Signal; Transmembrane.
FT   SIGNAL        1     21       Potential.
FT   CHAIN        22    427       Interleukin-13 receptor alpha-1 chain.
FT                                 /FTId=PRO_0000010939.
FT   TOPO_DOM     22    343       Extracellular (Potential).
FT   TRANSMEM    344    367       Potential.
FT   TOPO_DOM    368    427       Cytoplasmic (Potential).
FT   MOTIF       327    331       WSXWS motif.
FT   MOTIF       374    382       Box 1 motif.
FT   CARBOHYD     37     37       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD     61     61       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    105    105       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    138    138       N-linked (GlcNAc. . .) (Potential).
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FT   CARBOHYD    157    157       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    235    235       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    265    265       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    293    293       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    329    329       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    341    341       N-linked (GlcNAc. . .) (Potential).
FT   DISULFID     46     95       Potential.
FT   DISULFID    134    144       By similarity.
FT   DISULFID    173    185       By similarity.
FT   CONFLICT    130    130       T -> I (in Ref. 3).
FT   CONFLICT    358    358       G -> D (in Ref. 3).
SQ   SEQUENCE   427 AA;  48760 MW;  5983B3E8F554107B CRC64;

  Query Match             99.5%;  Score 2311;  DB 1;  Length 427;
  Best Local Similarity   99.5%;  Pred. No. 6.2e-168;
  Matches  425;  Conservative    0;  Mismatches    2;  Indels    0;  Gaps    0;

Qy          1 MEWPARLCGLWALLLCAGGGGGGGGAAPTETQPPVTNLSVSVENLCTVIWTWNPPEGASS 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MEWPARLCGLWALLLCAGGGGGGGGAAPTETQPPVTNLSVSVENLCTVIWTWNPPEGASS 60

Qy         61 NCSLWYFSHFGDKQDKKIAPETRRSIEVPLNERICLQVGSQCSTNESEKPSILVEKCISP 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 NCSLWYFSHFGDKQDKKIAPETRRSIEVPLNERICLQVGSQCSTNESEKPSILVEKCISP 120

Qy        121 PEGDPESAVIELQCIWHNLSYMKCSWLPGRNTSPDTNYTLYYWHRSLEKIHQCENIFREG 180
              ||||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 PEGDPESAVTELQCIWHNLSYMKCSWLPGRNTSPDTNYTLYYWHRSLEKIHQCENIFREG 180

Qy        181 QYFGCSFDLTKVKDSSFEQHSVQIMVKDNAGKIKPSFNIVPLTSRVKPDPPHIKNLSFHN 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 QYFGCSFDLTKVKDSSFEQHSVQIMVKDNAGKIKPSFNIVPLTSRVKPDPPHIKNLSFHN 240

Qy        241 DDLYVQWENPQNFISRCLFYEVEVNNSQTETHNVFYVQEAKCENPEFERNVENTSCFMVP 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 DDLYVQWENPQNFISRCLFYEVEVNNSQTETHNVFYVQEAKCENPEFERNVENTSCFMVP 300

Qy        301 GVLPDTLNTVRIRVKTNKLCYEDDKLWSNWSQEMSIGKKRNSTLYITMLLIVPVIVADAI 360
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||| ||
Db        301 GVLPDTLNTVRIRVKTNKLCYEDDKLWSNWSQEMSIGKKRNSTLYITMLLIVPVIVAGAI 360

Qy        361 IVLLLYLKRLKIIIFPPIPDPGKIFKEMFGDQNDDTLHWKKYDIYEKQTKEETDSVVLIE 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        361 IVLLLYLKRLKIIIFPPIPDPGKIFKEMFGDQNDDTLHWKKYDIYEKQTKEETDSVVLIE 420

Qy        421 NLKKASQ 427
              |||||||
Db        421 NLKKASQ 427
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Aman does not teach isolated antibodies that bind IL-13 receptor alpha chain, but does disclose that the development of said antibodies may be useful in

determining the binding of IL-4Ralpha and IL-13Ralpha (see page 29269 and 29265).

Takatsu discloses production of antibodies to IL5. The production of antibodies to polypeptides is routine in the art and Takatsu is but one of the many examples available in the prior art. Takatsu discloses the production antibodies, e.g. those that inhibited the binding of IL-5 to IL-5R

It would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made to use the polypeptide disclosed by Aman and use the method of Takatsu to raise antibodies that bind to IL13 alpha receptor disclosed by Aman. The ordinary artisan would have been motivated to produce said antibody to study the interaction of IL4R alpha with IL-13R alpha. The ordinary artisan would have expected success at producing said antibody because antibody production is a well defined art using well established techniques. Many of the antibodies produced by using the polypeptide of Aman would inherently bind to the polypeptide of SEQ ID NO:9 of instant application due to the close homology of the two polypeptides, absent evidence to the contrary.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hilton (see Proc. Natl. Acad. Sci. USA. Vol. 93, pages 497-501, January 1996) in view of Aman (IDS, J. Biol. Chem., Vol. 271, No.46, November 15, pages 29265-29270, 1996) and further in view of Takatsu et al (US Patent 5,453,491).

Hilton discloses a polypeptide (Il-13 receptor alpha chain) which has 72.9% query match with the polypeptide of SEQ ID NO:9.

Sequence comparison of the Hilton polypeptide and SEQ ID NO:9 of instant application is disclosed below:

```
RESULT 9
I13R1_MOUSE
ID   I13R1_MOUSE    STANDARD;      PRT;   424 AA.
AC   O09030; Q7TT27;
DT   01-NOV-1997, integrated into UniProtKB/Swiss-Prot.
DT   01-JUL-1997, sequence version 1.
DT   07-MAR-2006, entry version 52.
DE   Interleukin-13 receptor alpha-1 chain precursor (IL-13R-alpha-1) (IL-
DE   13RA-1) (Interleukin-13-binding protein) (NR4) (CD213a1 antigen).
GN   Name=Il13ra1; Synonyms=Il13r, Il13ra;
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Sciurognathi;
OC   Muroidea; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   NUCLEOTIDE SEQUENCE [MRNA].
RX   MEDLINE=96133964; PubMed=8552669; DOI=10.1073/pnas.93.1.497;
RA   Hilton D.J., Zhang J.-G., Metcalf D., Alexander W.S., Nicola N.A.,
RA   Willson T.A.;
RT   "Cloning and characterization of a binding subunit of the interleukin
RT   13 receptor that is also a component of the interleukin 4 receptor.";
RL   Proc. Natl. Acad. Sci. U.S.A. 93:497-501(1996).
RN   [2]
RP   NUCLEOTIDE SEQUENCE [LARGE SCALE MRNA].
RC   STRAIN=FVB/N; TISSUE=Brain, and Colon;
RX   MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA   Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA   Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA   Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA   Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA   Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA   Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA   Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA   Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA   Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA   Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA   Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA   Fahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA   Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA   Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA   Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA   Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA   Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT   "Generation and initial analysis of more than 15,000 full-length human
RT   and mouse cDNA sequences.";
RL   Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
CC   -!- FUNCTION: Binds IL13 with a low affinity. Together with IL4R-alpha
CC       can form a functional receptor for IL13. Also serves as an
CC       alternate accessory protein to the common cytokine receptor gamma
CC       chain for IL4 signaling, but cannot replace the function of gamma
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CC       C in allowing enhanced IL2 binding activity (By similarity).
CC   -!- SUBUNIT: Interleukin 13 receptor is a complex of IL4R, IL13RA1,
CC       and possibly other components (By similarity).
CC   -!- SUBCELLULAR LOCATION: Membrane; single-pass type I membrane
CC       protein.
CC   -!- TISSUE SPECIFICITY: Spleen, liver, thymus, heart, lung, kidney,
CC       testis, stomach, brain, skin, and colon; but not skeletal muscle.
CC   -!- DOMAIN: The WSXWS motif appears to be necessary for proper protein
CC       folding and thereby efficient intracellular transport and cell-
CC       surface receptor binding.
CC   -!- DOMAIN: The box 1 motif is required for JAK interaction and/or
CC       activation.
CC   -!- SIMILARITY: Belongs to the type I cytokine receptor family. Type 5
CC       subfamily.
CC   ---------------------------------------------------------------------
CC   Copyrighted by the UniProt Consortium, see http://www.uniprot.org/terms
CC   Distributed under the Creative Commons Attribution-NoDerivs License
CC   ---------------------------------------------------------------------
DR   EMBL; S80963; AAB50695.1; -; mRNA.
DR   EMBL; BC052425; AAH52425.2; -; mRNA.
DR   EMBL; BC059939; AAH59939.1; -; mRNA.
DR   Ensembl; ENSMUSG00000017057; Mus musculus.
DR   MGI; MGI:105052; Il13ra1.
DR   GO; GO:0005615; C:extracellular space; TAS.
DR   GO; GO:0016021; C:integral to membrane; TAS.
DR   InterPro; IPR002996; Cytkn_rcpt_B/G.
DR   InterPro; IPR003532; Hempt_rcpt_S_F2.
DR   PROSITE; PS01356; HEMATOPO_REC_S_F2; 1.
KW   Glycoprotein; Membrane; Receptor; Signal; Transmembrane.
FT   SIGNAL        1     25       Potential.
FT   CHAIN        26    424       Interleukin-13 receptor alpha-1 chain.
FT                                 /FTId=PRO_0000010940.
FT   TOPO_DOM     26    340       Extracellular (Potential).
FT   TRANSMEM    341    364       Potential.
FT   TOPO_DOM    365    424       Cytoplasmic (Potential).
FT   MOTIF       324    328       WSXWS motif.
FT   MOTIF       371    379       Box 1 motif.
FT   CARBOHYD     35     35       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD     59     59       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    103    103       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    136    136       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    262    262       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    338    338       N-linked (GlcNAc. . .) (Potential).
FT   DISULFID     44     93       Potential.
FT   DISULFID    132    142       By similarity.
FT   DISULFID    171    183       By similarity.
SQ   SEQUENCE   424 AA;  48402 MW;  EB8330A0DC82C9F9 CRC64;

  Query Match             72.9%;  Score 1692.5;  DB 1;  Length 424;
  Best Local Similarity   74.6%;  Pred. No. 1.1e-120;
  Matches  318;  Conservative   40;  Mismatches   65;  Indels    3;  Gaps    2;

Qy          1 MEWPARLCGLWALLLCAGGGGGGGGAAPTETQPPVTNLSVSVENLCTVIWTWNPPEGASS 60
              |  ||  |  |  |||       |  || || |||||||||||||||:||||:||||||
Db          1 MARPALLGELLVLLLWT--ATVGQVAAATEVQPPVTNLSVSVENLCTIIWTWSPPEGASP 58

Qy         61 NCSLWYFSHFGDKQDKKIAPETRRSIEVPLNERICLQVGSQCSTNESEKPSILVEKCISP 120
              ||:| ||||| |:|||||||| |  |:||:|:|||||||| ||||||| ||:|||||
Db         59 NCTLRYFSHFDDQQDKKIAPETHRKEELPLDEKICLQVGSQCSANESEKPSPLVKKCISP 118

Qy        121 PEGDPESAVIELQCIWHNLSYMKCSWLPGRNTSPDTNYTLYYWHRSLEKIHQCENIFREG 180
              ||||||||| ||:|||||||||||||||||||||:||||||: ||||  |||||:|||
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Db        119 PEGDPESAVTELKCIWHNLSYMKCSWLPGRNTSPDTHYTLYYWYSSLEKSRQCENIYREG 178

Qy        181 QYFGCSFDLTKVKDSSFEQHSVQIMVKDNAGKIKPSFNIVPLTSRVKPDPPHIKNLSFHN 240
              |:  ||| |||| : |||  :||||||||||||:||  || ||| |||||||||:|   |
Db        179 QHIACSFKLTKV-EPSFEHQNVQIMVKDNAGKIRPSCKIVSLTSYVKPDPPHIKHLLLKN 237

Qy        241 DDLYVQWENPQNFISRCLFYEVEVNNSQTETHNVFYVQEAKCENPEFERNVENTSCFMVP 300
                | |||:||||| |||| ||||||:||: ||:  |:| ||:| | :||:| |||| :|
Db        238 GALLVQWKNPQNFRSRCLTYEVEVNNTQTDRHNILEVEEDKCQNSESDRNMEGTSCFQLP 297

Qy        301 GVLPDTLNTVRIRVKTNKLCYEDDKLWSNWSQEMSIGKKRNSTLYITMLLIVPVIVADAI 360
              ||| | : |||:||||||||::|:||||:||:  ||||::||| | |||| :|| || |:
Db        298 GVLADAVYTVRVRVKTNKLCFDDNKLWSDWSEAQSIGKEQNSTFYTTMLLTIPVFVAVAV 357

Qy        361 IVLLLYLKRLKIIIFPPIPDPGKIFKEMFGDQNDDTLHWKKYDIYEKQTKEETDSVVLIE 420
              |:|| ||||||||||||||||||||||||||||||||||||||||||:||||||||||
Db        358 IILLFYLKRLKIIIFPPIPDPGKIFKEMFGDQNDDTLHWKKYDIYEKQSKEETDSVVLIE 417

Qy        421 NLKKAS 426
              |||||:
Db        418 NLKKAA 423
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Hilton discloses a NR4 polypeptide (IL-13 receptor) which binds IL-13 and together with IL-4R-alpha can form a functional receptor for IL-13 (see Fig 1, Abstract and Discussion). Hilton does not disclose isolated antibodies that bind (IL-13 receptor alpha chain

Aman discloses that isolated antibodies that bind IL-13 receptor alpha may be useful in determining the binding of IL-4Ralpha and IL-13Ralpha (see page 29269 and 29265).

Takatsu discloses production of antibodies to IL5. The production of antibodies to polypeptides is routine in the art and Takatsu is but one of many examples. The inventors used various methods and produced monoclonal antibodies which inhibited the binding of IL-5 to IL-5R

It would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made to take the polypeptide disclosed by Hilton and by using the method of Takatsu raise antibodies that bind to IL13 alpha receptor disclosed by Hilton. The ordinary artisan would have been motivated to

produce said antibody to study the interaction of IL4R alpha with IL-13R alpha as disclosed by Aman.

The ordinary artisan would have expected success at producing said antibody because antibody production is a well defined art using well established techniques. Many of the antibodies produced by using the polypeptide of Hilton would inherently bind to the polypeptide of SEQ ID NO:9 of instant application due to the close homology of the two polypeptides, absent evidence to the contrary.

12. No claim is allowed.

13. ***Priority***

Applicant is reminded that in order for a patent issuing on the instant application to obtain the benefit of priority based on priority papers filed in parent Application No. 08/969,125 under 35 U.S.C. 119(a)-(d) or (f), a claim for such foreign priority must be timely made along with a certified copy of the foreign application. To satisfy the requirement of 37 CFR 1.55(a)(2) for a certified copy of the foreign application, applicant may simply identify the application containing the certified copy. It is noted that claim to foreign priority is made but the United Kingdom Application 9625899.1 is not attached. Appropriate correction is required.

Advisory

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nirmal S. Basi whose telephone number is 571-272-0868. The examiner can normally be reached on 9:00 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol can be reached on 571-272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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